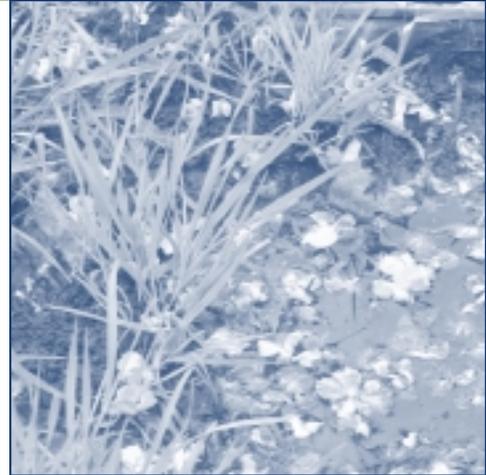


A LIVING WATER ECOSYSTEM

PART 4 – 45 minutes

OVERVIEW

After teams have collected data at least twice, students read a one-page information sheet about the living (biotic) and non-living (abiotic) components of a watershed and water ecosystem, and the factors that affect the survival of those components. Students take what they learn and relate it to the data they are collecting. Students continue to observe and record data.



Standards: 3a, 3b, 6a, 6b, 6c, 6d

Materials

- Information Sheet B – A Living Water Ecosystem – 1 per group

Vocabulary Words

- Contamination
- Invertebrate
- Watershed

Other Resources

See Teacher Resources, page 116 for additional activities that relate to watersheds.

Helpful Hints

- Provide additional information about the local watershed.
- Watersheds can be as small as a leaking sprinkler head to as large as an entire city basin. Show students the smaller watersheds that can be found around the schoolyard.
- Help students investigate where the water flowing off their schoolyard leads.
- Provide students with information about a local body of water – lake, river, stream, or ocean. To locate your closest body of water, consult a local map. Go to www.epa.gov/surf/ to find the name of your watershed.
- If possible, take a field trip to the local waterway to observe how humans may be impacting it.

PROCEDURE

1. Have each student read Information Sheet B – A Living Water Ecosystem
2. Have student groups discuss what they read and the ways in which it relates to their investigations. Each group can report their main points to the class as part of a group discussion.
3. Looking at the illustration on Information Sheet B, have students figure out how water moves in their watershed community. Have them investigate further to confirm their ideas.
4. Have students investigate the pathway that water takes from their campus to the nearest body of water.



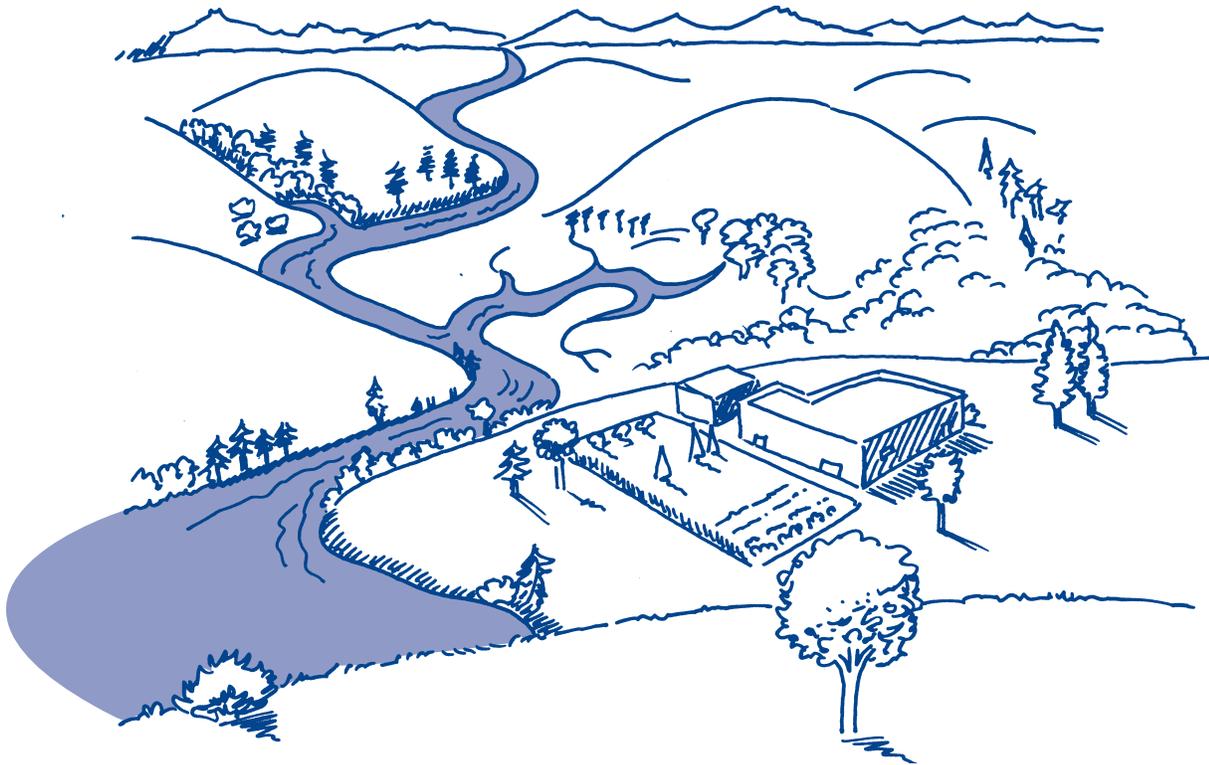
GUIDED QUESTIONS



- What are the living and non-living components of our watershed?
- Where are there watersheds within our schoolyard?
- What does a living organism need to survive within an ecosystem?
- What water services or goods do you depend on?
- What is the closest body of water to our school?
- Is that body of water connected to another body of water?
- Based on your investigations, what impact does campus runoff have on your local water system?
- How do you know?

A LIVING WATER ECOSYSTEM

Your community, whether it is in a city or rural town, is part of a watershed. A watershed is the land area that directs water to a drainage system or river. It helps supply water to our community by allowing it to seep into the ground or channel it into streams, rivers, and other bodies of water. Gravity moves water through the watershed from higher to lower areas.



A watershed includes living (biotic) components such as people, wildlife, plants, and insects; as well as non-living (abiotic) components, including rock, soil, water, and air. Both components belong to the environment of a watershed community.

Look around. What are the living and non-living components of your watershed?

Your watershed directs water into another system of living and non-living components – a water ecosystem. It is the non-living components that make up the environment for the living organisms – water, sunlight, rocks, soil, and air – and allow them to survive. Without these non-living components, living organisms would not survive.

Humans depend on the services of a water ecosystem. Water ecosystems provide us with water, food, recreation, and more. Humans are responsible for protecting these ecosystems. However, pollution can harm these ecosystems and damage their ability not only to provide us with goods, but also maintain the balance of a functioning ecosystem.

For example, large rivers in California such as the Sacramento, American, Feather, and lower San Joaquin provide major fish spawning habitats for salmon, steelhead trout, and striped bass. Young fish depend on small invertebrates – mostly insects and tiny shrimp – for food. When “land pollution,” field pesticides, and erosion from construction sites, run off through a watershed and enter streams and rivers, they kill or seriously harm these food sources and the young fish. These sources of contamination decrease the amount of oxygen the fish have to breathe, reduce the amount of sunlight used to grow the plants they need for food, and finally, cover the available rocks and soil the fish need to lay and cover their eggs. Every non-living component is impacted by this contamination and therefore impacts the living components.

Where is the water from your schoolyard going? To a nearby river, stream, lake or ocean? The watersheds of most cities and school grounds contain up to 90 percent hard surfaces such as rooftops, concrete playgrounds, streets, and parking lots where water collects quickly and runs off into the street. This not only prevents water from seeping into the ground to replenish underground supplies of fresh water but sends “land pollution” directly into our rivers and the ocean.

Think about the following questions:

- What are you observing during your data collection?
Do hard surfaces have an impact?
- What about the “land pollution?” What impact on your local water ecosystem do you think it may have?

